# RAJYA SABHA

*Thursday, the 12th March, 1992/ 22 Phalguna, 1913 (Saka)*

The house met at eleven of the clock. **Mr. Chairman** in the Chair.

## ORAL ANSWERS TO QUESTIONS

*221. [*The questioners (Shri Ram Jethmalani and Shri Ranjit Singh) were absent. For answer* vide *col.* 50-51 infra].

**Evolution of artificial intelligence system through Indian Sanskrit Tradition**

*22. SHRI SIKANDER BAKHT†
SHRI JAGDISH PRASAD MATHUR:

Will the PRIME MINISTER be pleased to state:

(a) what progress has been made in the project of evolving artificial intelligence systems through Indian Sanskrit tradition during the last 3 years;

(b) whether researches have established that Sanskrit is the best language for computers in view of the advantages thereof;

(c) when was the work for Standardising a code for Indian Languages begun; and

(d) the target fixed for accepting Sanskrit as a Computer Language?

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†The question was actually asked the floor of the House by Shri Sikander Bakht.

THE MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS (SHRIMATI MARGARET ALVA): (a) to (d) A Statement is laid on the Table of the Rajya Sabha.

**Statement**

(a) There is no formal project initiated by the Government on Artificial Intelligence System through Indian Sanskrit tradition. However, under the Technology Development for Indian Languages Programme of the Department of Electronics, a number of projects involving artificial intelligence Sanskrit and computers have been initiated. The details of projects alongwith the progress made so far are given in Annexure. (*See* below)

(b) and (d) Though there is no indication that Sanskrit as such can be used as a language for computers, there is a view that formal structure and strict adherence to rules of the Sanskrit grammar may provide insight into the natural language processing in computers. It has been observed that Sanskrit has a potential to become a model for Knowledge representation and as a link language for Machine Translation.

(c) The work on standardisation of Code for Indian languages was initiated during seventies. The final version of the Indian Standard Script Code for Information Interchange (ISCII) was published by Bureau of Indian Standards in December, 1991.

**Annexure**

*List of projects related to "Sanskrit and Computer" funded under TDIL programme*

| Project Name | Name of the Institution | Year of Initiation | Status |
|---|---|---|---|
| (1) Preparation of Curriculam Guidelines and Course material for introduction of Sanskrit Vyakaran, to Computer Scientist and Linguists. | SLBSR Sanskrit Vidyapeeth, Delhi | 1991 | Curriculam and course material have been prepared and one course each have been conducted fulfilling the project objective. |
| (2) Preparation of Curriculam Guidelines and Course material for introdution of Sanskrit Mimamsa, to Linguists and Computer Scientists. | Rashtriya Sanskrit Vidyapeeth Tirupati | 1991 | Do. |
| (3) Preparation of Curriculam Guidelines and Course material for introduction of Sanskrit Nirukta to Linguists and Computer Scientists. | Gurukul Kangri University, Hardwar | 1991 | -Do.- |
| (4) Utilization of Sanskrit in Computer based semantic processing (Kriya R esearch) | Academy of Sanskrit Research, Melkote | 1991 | Phase I of the projec will be completed by the end of March, 1992. A dictionary of technical Sanskrit words has been built up giving their precise meaning. Software for Computerisation of the Shabda Bodha techniques have been developed. |
| (5) Exploring Information processing Structuring in Sanskrit Shastra. | Sampurnanand Sanskrit University Varan si. | 1991 | On-going |
| (6) Resource Centre for Computer Assisted Learning Teaching Programme for B. Ed., M. Ed. Students. | SLBS Rashtriya Sanskrit Vidyapeeth, Delhi. | 1991 | On-going |
| (7) Computer Assisted Sanskrit Teaching/Learning Environment (CASTLE) | -Do- | 1988 | Phase 1 of the project has been completed. Many packages for Computer Assisted Sanskrit Teaching/ Learning have been developed. |
| (8) Development of Corpora of Text of Indian Language in Machine Readable form (Sanskrit) | Sampurnanand Sanskrit University, Varanasi. | 1991 | The text is being prepared in Machine Readable form for automatic tagging in corpus building. |

SHRI SIKANDER BAKHT: I am sorry, Sir. I am not used to elaborating. I believe that the Question Hour should remain restricted to Question Hour, but I cannot help elaborating on this present situation, because...

SHRI V. GOPALSAMY: Do you propose to give lecture?

SHRI SIKANDER BAKHT: I don't want to.

किस्सा यह है कि—

रहे दो-दो फरिश्ते साथ अब इसाफ क्या होगा
किसी ने कुछ लिखा होगा, किसी ने कुछ लिखा होगा ।

यह सिलसिला हमारे इस जवाब में दिखाई देता है जो मोहतरम मिनिस्टर साहिबा ने दिया है । इनका पहला जवाब जो है—

†شری سکندر بخت : قصہ یہ ہے کہ... رہے دو دو فرشتے ساتھ اب انصاف کیا ہوگا کسی نے کچھ لکھا ہوگا کسی نے کچھ لکھا ہوگا۔ یہ سلسلہ ہمارے اس جواب میں دکھائی دیتا ہے جو محترم منسٹر صاحب نے دیا ہے۔ ان کا پہلا جواب جو ہے۔ . .

There is no formal approach initiated by the Government on Artificial Intelligence system.

अब इसमें थ्रू इंडियन ट्रेडिशन की बात तो है लेकिन आगे यह कहा है कि—

اب اس میں "تھرو انڈین سنسکرت ٹریڈیشن کی بات تو ہے لیکن آگے یہ کہا ہے کہ . . . .

A number of projects involving artificial intelligence, Sanskrit and computers have been initiated.

और इसके साथ जो स्टेटमेंट लगा है उसमें कहीं इंटिलिजेंस का जिक्र नहीं है । यह तमाम स्टेटमेंट पढ़ने के बाद पता लगता है कि आर्टिफिशियल इन्टेलिजेंस का जिक्र कहीं नहीं है । मुझे सारी की सारी एप्रोच टुवर्डस संस्कृत हाफ हार्टेड लगती है और मुझे सख्त अफसोस है कि इस हाफ हार्टेड एप्रोच का नतीजा है कि—

اور اس کے ساتھ جو اسٹیٹمنٹ لگا ہے اس میں کہیں انٹیلی جینس کا ذکر نہیں ہے۔ یہ تمام اسٹیٹمنٹ پڑھنے کے بعد پتہ لگتا ہے کہ آرٹیفیشیل انٹیلی جینس کا ذکر کہیں نہیں ہے۔ مجھے ساری کی ساری اپروچ ٹوارڈس سنسکرت ہاف ہارٹیڈ لگتی ہے۔

श्री सभापति : एक मिनट रुकिए । यह जो एनैक्सर है, टॉप को पढ़िए । उसमें हैडिंग में ही दिया हुआ है ।

श्री सिकन्दर बख्त : जी हां वह हैडिंग भी बड़ा अजीबोगरीब है । उसका हैडिंग बहुत ही मामूली है ।

شری سکندر بخت : جی ہاں وہ ہینڈنگ بھی بڑا عجیب و غریب ہے۔ اس کا ہینڈنگ بہت ہی معمولی ہے۔

Sanskrit in Computer based semantic etc. etc., but the question is that there is not a single word in the whole statement.

अब्बल तो वह स्टेटमेंट आप गौर करके देखें, शुरू के 3-4 जो हैं वह सिर्फ करिकुलम से मुतल्लिक हैं ।

اول تو وہ اسٹیٹمنٹ آپ غور کر کے دیکھیں شروع کے تین چار جو ہیں وہ صرف کریکلم سے متعلق ہیں۔

श्री सभापति : इसमें सिर्फ कम्प्यूटर लगाया है उन्होंने ।

†[] Transliteration in Arabic Script.

श्री सिकन्दर बख्त : कम्प्यूटर लगाया है और

†شری سکندر بخت : کمپیوٹر لگایا ہے اور - - - -

Key words 'artificial intelligence and computer language based on Sanskrit'

अब उसमें क्या हो रहा है ? आप चौथे पेज पर पढ़ेंगे । अव्वल तो संस्कृत का नाम ही इसमें एक में है कि—

†اب اس میں کیا ہو رہا ہے آپ چوتھے پیج پر پڑھیں گے - اوّل تو سنسکرت کا نام ہی اس میں ایک میں ہے کہ - - -

Sanskrit in computer based semantic processing etc. My question is what is it being used for development of artificial intelligence? Where you have said that a dictionary of technical Sanskrit words has been built up etc.

कम्प्यूटराइजेशन पर सवाल मेरा आएगा लेकिन आप समझ लें कि जो की-वर्डज हैं—

†کمپیوٹرائزیشن پر سوال میرا آئے گا لیکن آپ سمجھ لیں کہ جو کی ورڈز ہیں -

What is the meaning of artificial intelligence? Artificial intelligence is not related to manually feeding a formula.

मान लीजिए मेरा दिल बाग-बाग हो गया । यहां ट्रांसलेशन का भी जिक्र किया है एक जगह । सातवें में लिखा है—

†مان لیجئے میرا دل باغ باغ ہو گیا - یہاں ٹرانسلیشن کا بھی ذکر کیا ہے ایک جگہ ساتویں میں لکھا ہے -

Computer assisted Sanskrit teaching learning environment etc.

उसका तरजुमा जो कंप्यूटर मैनुअली फीड फारमूले के मातहत होगा वह होगा—

†اس کا ترجمہ جو کمپیوٹر مینولی فیڈ فارمولہ کے ماتحت ہوگا وہ ہوگا -

My heart became garden garden.

लेकिन अगर आर्टिफिशियल इंटिलिजेंस के मातहत उसका जवाब आएगा, उसका रिस्पांस आएगा, तो उसका जवाब होगा--

†لیکن اگر آرٹیفیشیل انٹیلی جینس کے ماتحت اس کا جواب آئے گا - اس کا ریسپانس آئے گا تو اس کا جواب ہوگا -

I will be very happy.

ये मेरा दिमाग चक्कर खा रहा है ।

†یہ میرا دماغ چکر کھا رہا ہے -

My head is eating circles.

लेकिन अगर आर्टिफिशियल इंटेलिजेंस के मातहत उसका जवाब आएगा तो जवाब होगा--

†لیکن اگر آرٹیفیشیل انٹیلی جینس کے ماتحت اس کا جواب آئے گا تو جواب ہوگا -

I am feeling giddy.

तो मैं कहना चाहता हूं कि इन की वर्डज को समझना जरूरी है और

†تو میں کہنا چاہتا ہوں کہ ان کے ورڈز کو سمجھنا ضروری ہے اور

that the whole question is basically related to artificial intelligence and computer language based on Sanskrit.

उसके लिए, जितना वक्त गुजार रहा है प्रोजेक्ट बनाने का, इस प्रोजेक्ट में कुछ रखा नहीं है । संस्कृत लेंग्वेज ऐसी है कि नेशनल कंसोलिडेशन के लिए उसका डेवलपमेंट जरूरी है ।

†[] Transliteration in Arabic Script.

Sanskrit is a language practically equi-distant from most of the languages.

बहुत सारी सिलवटें जो हैं जो लिंग्विस्टिक टेंशंस के नाम पर आती हैं उन सिलवटों को दूर किया जा सके ।

†شری سکندر بخت : سلسلہ جاری ہے اس کے لیے جتنا وقت گذر رہا ہے پروجیکٹ بنانے کا اس پروجیکٹ میں کچھ رکھا نہیں ہے سنسکرت لینگویج ایسی ہے کہ نیشنل کنسولیڈیشن کے لیے اس کا ڈیولپمنٹ ضروری ہے بہت ساری سلوٹیں جو ہیں جو لنگوسٹک ٹینشنس کے نام پر آتی ہیں ان سلوٹوں کو دور کیا جا سکے ۔

श्री सभापति : आप क्या जानना चाहते हैं यह बताइये ।

श्री सिकन्दर बख्त : मैं जो जानना चाहता हूं वह मैंने मिनिस्टर साहिबा को बता दिया है । मैं उनको तकलीफ नहीं पहुंचाना चाहता हूं । मैं खाली कहना चाहता हूं--

†شری سکندر بخت : میں جاننا چاہتا ہوں وہ میں نے منسٹر صاحبہ کو بتا دیا ہے میں ان کو تکلیف نہیں پہنچانا چاہوں ۔ میں خالی کہنا چاہتا ہوں ۔ - - - -

श्री सभापति : जो आपने बताया वह आप हाउस को भी बता दीजिए ।

श्री सिकन्दर बख्त : मैंने वह हाउस को ही बताया है । मैं अब सवालात करता हूं ।

†شری سکندر بخت : میں نے وہ ہاؤس کو ہی بتایا ہے ۔ میں اب سوال کرتا ہوں ۔

I would, therefore, like to know from the hon. Minister how many computer scientists with the specific knowledge of artificial intelligence have been employed in the eight projects that have been undertaken in the name of Sanskrit and Computer. That is one.

श्री सभापति : ये कम्प्यूटर आर्टिफिशियल आलमोस्ट इन्टर-चेंजेबल होते हैं ।

श्री सिकन्दर बख्त : कैसे ?

MR. CHAIRMAN: The term "Computer and artificial intelligence", they often are used inter-changeably.

SHRI SIKANDER BAKHT: No, Sir.

I say, it is very, very distinct from the material or the formulate fed manually to the computer. Not that it has got to be developed further. It is more intricate than ordinary manual feeding of the computer.

MR. CHAIRMAN: May I explain to you, in a word, if you don't mind? Sanskrit has been recognised as an ideal language for computer because of its Grammar and other things, because everything is so scientific. When you said about the root, that is the special thing in Sanskrit. Because of this, it has got that recognition the world over.

SHRI SIKANDER BAKHT: That exactly is the point. Sanskrit being such a useful language, what is being done to develop artificial intelligence? My question is, I would like to know from the hon. Minister, how many computer scientists with the specific knowledge of artificial intelligence—as explained by me, what artificial intelligence is—have been employed in the eight projects they have undertaken in the name of Sanskrit and Computer.

The other question is, what is the progress in standardising the code of Indian languages especially in the fieled of computer language based on Sanskrit? For this purpose, is there

†[] Transliteration in Arabic Script.

a scheme to link it through a network of the Sanskrit institutions with computer science projects?

SHRIMATI MARGARET ALVA: Sir, to answer the first part of the objection which the hon. Member had raised, I would like to point out that in the question it was specifically mentioned whether there is a formal project for artificial intelligence system through Indian Sanskrit tradition. Sir, we do have projects known as the TDIL, that is, Technology Development for Indian Languages, all the Indian languages. Sanskrit is one of them. There is no formal separate project only for Sanskrit but it is a part of the general programme of development of Indian languages. Sanskrit has received a special attention. Out of Rs. 2.33 crores spent last year, Rs. 80 lakhs have been on Sanskrit out of the general programme. That is the first point.

MR. CHAIRMAN: On computer programme in Sanskrit, you have spent Rs. 80 lakhs?

SHRIMATI MARGARET ALVA: For the development of Sanskrit as a link language for the Indian languages, this has been a project.

MR. CHAIRMAN: He wants to know about Sanskrit and computer.

SHRIMATI MARGARET ALVA: He is talking about how many persons have been employed in eight projects which have been started. We have got 40 people computer experts who have been employed up to now in all the projects. I have given a list of the 8 projects which are functioning in the various institutions in the country. Sir, we fund these institutions. They get the experts, the linguists, the Sanskrit scholars and the computer experts together. In fact, some of them are meant only to prepare the curriculum for training of experts of teachers and others for carrying the projects further. Three of them are curriculum development-based projects. You have asked from me, how many have been employed in the projects. There are 40 experts, at the moment, employed in the projects.

SHRI SIKANDER BAKHT: Experts of artificial intelligence?

MR. CHAIRMAN: Experts on Sanskrit and computer.

SHRIMATI MARGARET ALVA: Sir, let me be very clear. There are no Sanskrit experts in computers all over the country. Our idea is to bring together the experts in Sanskrit, the computer people and the linguists so that the other languages can also use the basic grammar which Sanskrit provides as a link language. I do realise that the Member is saying that Sanskrit grammar has been recognised because of its special rules and the special Paninian grammar which we are talking about and it can be used as a system for the development of computer language and we are working on it.

SHRI SIKANDER BAKHT: Mr. Chairman, Sir, could the hon. Minister say something about the progress that has been made? Even in the field that she is mentioning—that is not my question at all—what progress has been made? Is it tardy or not?

SHRIMATI MARGARET ALVA: "Sanskrit 86" was the first effort at creating awareness about the utilisation of Sanskrit as a link language for computers. It was only in 1986 ..... ( *Interruptions*). The project started in the 80s. The first meeting was held in Bangalore in 1986. It is only very recent. The funding has started since 1991. As far as the progress is concerned, I cannot give him an exact date by which everything will be completed. But the standard code for Indian languages which he has asked for has been adopted in December, 1991. It was cultivated in May. Last time I mentioned it. It has now been adopted in December, 1991.

SHRIMATI JAYANTHI NATARAJAN: I wanted to know what steps had been taken till now to develop a computer language for Indian languages. I think Mr. Bakht has already asked that question and she has also answered it.

MR. CHAIRMAN: She is not neglecting other languages.

SHRI V. GOPALSAMY: Mr. Chairman, Sir, the Minister has said in her answer that all the national languages will be taken into account. Tamil is the most ancient language; not only ancient and classical but a living language. In her reply she has said that Rs. 233 lakhs has been spent so far and out of this Rs. 233 lakhs, Rs. 80 lakh has been spent for Sanskrit alone. All the national languages which are mentioned in the Eighth Schedule should be given equal treatment. The Minister, in her statement, has referred to Sanskrit grammar. May I point out the fact that "Tholkappium', The Tamil grammar, is the most ancient, 5000 years old, in this country. It is the most ancient grammar among all the languages in this country. Why has the Government failed to take note of this point and why it has failed to provide facilities to develop computer systms and artificial intelligence in Tamil? They have not started any project so far as "Tholkappium" is concerned. Would the Minister consider my demand and give equal treatment to all languages? Otherwise.....

MR. CHAIRMAN: She knows about it.

SHRI V. GOPALSAMY: ..... the concept of unity will be destroyed because my friends are very much concerned about 'Hindu Rashtra'. Therefore, they want to impose 'Hindutva' through Sanskrit. That is the point.

MR. CHAIRMAN: It is a very simple thing. The question is, are you going to do a similar thing for the Tamil grammar?

SHRIMATI MARGARET ALVA: I want to assure the hon. Member that the TDIL covers all the 16 Indian laugauges, including Tamil.

MR. V. GOPALSAMY: Tamil is the most ancient language. Why should you not give a special status to this? (*Interruptions*). Mr. Chairman, Sir, I want your protection. The Minister has stated that a special status will be given to Sanskrit. Therefore, I am asking why Tamil, which is the most ancient language, should not be given such a special status. Why should they spend Rs. 80 lakhs on Sanskrit alone? Why should they give so much for Sanskrit? (*Interruptions*) Out of Rs. 233 lakhs, why have you given Rs. 80 lakhs to Sanskrit? That is my question. She has not answered my question. I want your protection.

SHRIMATI MARGARET ALVA: How can I answer if he does not allow me to?

MR. CHAIRMAN: Mr. Gopalsamy, wait a minute.

SHRI V. GOPALSAMY: Don't fall into the trap of BJP. (*Interruptions*) I warn you. (*Interruptions*). This is dividing the country. Unless all the languages are treated equally, this will lead to balkanisation. (*Interruptions*). I warn the Government. (*Interruptions*). You are going to divide the country on language. (*Interruptions*). The Minister has not ans-

wered my question why they have spent eighty lakhs of rupees for Sanskrit and why not for Tamil. (*Interruptions*).

MR. CHAIRMAN: So far as this House is concerned, it has got the greatest regard for Tamil, Tamil literature and Tamil grammar which was there before Christ. (*Interruptions*). But the question was about Sanskrit. So she came prepared for Sanskrit. But she has told that she is looking after other languages also and she will let you know what has been done in Tamil. She has told that the Tamil grammar which is very important will be taken care of. (*Interruptions*).

SHRI V. GOPALSAMY: We respect the versatile knowledge of the hon. Chairman. But the Minister has not replied to my question. I would like to know why they have spent eighty lakhs of rupees for Sanskrit. (*Interruptions*). For Sanskrit alone, why they have spent so much of amount? The Minister has not answered my question. (*Interruptions*).

SHRIMATI JAYANTHI NATARAJAN: Why don't you allow her to reply? (*Interruptions*)

SHRIMATI MARGARET ALVA: Sir, the question was specifically about Sanskrit and the projects. (*Interruptions*).

MR. CHAIRMAN: There is no quarrel between Sanksrit and Tamil. (*Interruptions*).

SHRIMATI MARGARET ALVA: I have given the details of what has been done for using Sanskrit. (*Interruptions*).

SHRI SIKANDER BAKHT: My question will reduce linguistic tensions. (*Interruptions*).

SHRIMATI MARGARET ALVA: Sir, the hon. Member has raised the question specifically about Sanskrit and what projects have been undertaken and therefore, it was related to Sanskrit. I am assuring the Member and that is why, I said, "'no", in my answer originally to you because it is not only a Sanskrit programme, it is TDIL which is development of Indian languages. In that, Sanskrit grammar has been found to be of a particular format which should help in utilising the grammar and its format in developing the artificial intelligence system for the computer. That is a separate question. Let me tell you that as far as other languages are concerned, the IIT at Kanpur had made a special breakthrough and the GIST card has been developed with which every computer in the country can be used in any one of the sixteen Indian languages. (*Interruptions*).

MR. CHAIRMAN: Including Tamil?

SHRIMATI MARGARET ALVA: And this in itself is a breakthrough. (*Interruptions*). The VIH chip costs only Rs. 6,000 and if it is used... (*Interruptions*).

SHRI V. GOPALSAMY: She has not answered my question why they have spent eighty lakhs of rupees for

Sanskrit. Why have you not spent equal money for other languages? She has not answered my question about the Tholkappium grammar. You know very much about it. It is more ancinet grammar than the Sanskrit grammar. (*Interruptions*).

SHRI V. NARAYANASAMY: Moreover, Tamil grammar is widely accepted by the world. (*Interruptions*).

SHRI V. GOPALSAMY: The hon. Chairman knows about the Tholkappium grammar. This grammar is the mother of all grammars. (*Interruptions*). The Minister has not replied to my question. She has not answered my question.

(*Interruptions*)

MR. CHAIRMAN: Q. No. 223.

**Drastic Reduction in Liabilties of Drug Companies by Special Team**

*223. SHRI SANTOSH KUMAR SAHU:†

SHRI RAJNI RANJAN SAHU:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that liabilities against drug companies involved in Supreme Court case were reduced by the Members of the Special Term after taking into consideration erroneous rates, quantities, period, allowing certain disputed set-offs and by not working out the liabilities on the formulations as envisaged in the Supreme Court judgement;

(b) whether it is also a fact that liabilities of over Rs. 300 crores against nine companies were reduced to a meagre amount of Rs. 17 crores; and

(c) if so, what action has been taken against the Members of Special Team?

THE MINISTER OF STATE IN THE MINISTRY OF CHEMICALS AND FERTILIZERS (SHRI CHINTA MOHAN): (a) to (c) A Statement is laid on the Table of the Rajya Sabha.

**Statement**

(a) and (b) The Special Team's recommendations regarding the liabilities of the companies involved in the Supreme Court case, aggregated to Rs. 13.57 crores only, for the period upto 31-12-1983. In view, however, on receipt of complaints alleging various acts of omission and commission on the part of the Special Team, it was decided, in 1989, to review all the recommendations made by the Team. As a result of review, the tentative liability of those companies for the period upto 31-12-1983 has gone upto Rs. 43.36 crores.. For the period after 1-1-1984 also the liabilities have since been worked out, tentatively, in a number of cases and communicated to the companies. The details are given in the Annexure. (*See* below).

(c) The question of taking any action against any member of the Special Team will arise only after the liabilities are finally determined.

†The question was actually asked on the floor of the House by Shri Santosh Kumar Sahu.